What is claimed is:

56. An EPO-IgG fusion protein, wherein at least one amino acid residue of the EPOa moiety of the fusion protein is altered such that a site which serves as a site for glycosylation in EPO does not serve as a site for glycosylation in the EPOa.

57. The EPO-IgG fusion protein of claim 56, wherein said fusion protein has the formula:

R1-L-R2; R2-L-Rl; orRl-L-R2-L-R1,

wherein R1 is an erythropoietin analog amino acid sequence; L is a peptide linker and R2 is a human IgG immunoglobulin amino acid sequence.

58. The EPO-IgG fusion protein of claim 57, wherein R1 and R2 are covalently linked via said peptide linker.

59. The EPO-IgG fusion protein of claim 56, wherein an amino acid residue of the EPO moiety which serves as an attachment point for glycosylation has been deleted.

60. The EPO-IgG fusion protein of claim 56, wherein an amino acid residue of the EPO moiety which serves as a site for glycosylation has been replaced with an amino acid residue which does not serve as a site for glycosylation.

61. The EPO-IgG fusion protein of claim 56, wherein said amino acid residue is selected from the group consisting of amino acid residues Asn24, Asn38, Asn83 and Ser126 of the EPO moiety.

62. The EPO-IgG fusion protein of claim 56, wherein said glycosylation site is altered at amino acid residue Ser126 of the EPO moiety and at least one additional N-linked glycosylation site selected from the group consisting of Asn24, Asn38 and Asn83 is altered.

63. The EPO-IgG fusion protein of claim 56, wherein said glycosylation site provides for N-linked glycosylation and is altered by replacing an amino acid residue Asn the EPO moiety

with Gln.

64. The EPO-IgG fusion protein of claim 56, wherein said glycosylation site provides for O-linked glycosylation and is altered by replacing an amino acid residue Ser with Gln.

65. The EPO-IgG fusion protein of claim 56, wherein one or more of amino acid residues 24, 38, or 83 the EPO moiety has been altered.

66. The EPO-IgG fusion protein of claim 65, wherein one or more of amino acid residues 24, 38, or 83 the EPO moiety has been replaced with Gln.

67. The EPO-IgG fusion protein of claim 56, wherein amino acid residue 126 the EPO moiety has been altered.

68. The EPO-IgG fusion protein of claim 67, wherein said amino acid residue 126 the EPO moiety has been replaced with Ala.

69. The EPO-IgG fusion protein of claim 56, wherein each of amino acid residues 24, 38, 83 and 126 the EPO moiety have been altered such that none of them serves as a glycosylation site.

70. The EPO-IgG fusion protein of claim 69, wherein each of said amino acid residues 24, 28, 83 and 126 the EPO moiety have been replaced with Gln, Gln, Gln, and Ala respectively.

71. The EPO-IgG fusion protein of claim 59, wherein said peptide linker is 10 to 30 amino acids in length.

72. The EPO-IgG fusion protein of claim 71, wherein each of said amino acids in said peptide linker is selected from the group consisting of Gly, Ser, Asn, Thr and Ala.

73. The EPO-IgG fusion protein of claim 69, wherein said peptide linker includes a sequence

having the formula (Ser-Ser-Ser-Ser-Gly)y wherein y is less than or equal to 8.

74. The EPO-IgG fusion protein of claim 69, wherein said peptide linker includes a sequence having the formula $((Ser\text{-}Ser\text{-}Ser\text{-}Ser\text{-}Gly)_3\text{-}Ser\text{-}Pro$.

75. The EPO-IgG fusion protein of claim 69, wherein the EPOa is Gln24, Gln38, Gln83, Ala126 EPO.

76. The EPO-IgG fusion protein of claim 56, wherein the fusion protein includes from left to right, an EPOa which includes amino acid residues Gln24, Gln38, Gln83 and Alal26, a peptide linker, and human serum albumin.

77. The EPO-IgG fusion protein of claim 76, wherein the EPOa is Gln24, Gln38, Gln83, Alal26 EPO.

78. The EPO-IgG fusion protein of claim 56, wherein the fusion protein is from left to right, Gln24, Gln38, Gln83, Ala126 EPO, a peptide linker having the formula $((Ser\text{-}Gly\text{-}Gly\text{-}Gly\text{-}Gly)_3\text{-}Ser\text{-}Pro)$ and a human IgG sequence.

79. The EPO-IgG fusion protein of claim 56, wherein the EPO-IgG fusion protein includes, from left to right, human IgG sequence, a peptide linker, and an EPOa which includes amino acid residues Gln24, Gln, Gl83 and Alal26.

80. The EPO-IgG fusion protein of claim 79, wherein the EPOa is Gln24, Gln38, Gln83, Alal26 EPO.

81. The EPO-IgG fusion protein of claim 56, wherein the fusion protein is from left to right, human IgG molecule, a peptide linker having the formula $((Ser\text{-}Gly\text{-}Gly\text{-}Gly\text{-}Gly)_3\text{-}Ser\text{-}Pro)$, and Gln24, Gln38, Gln83, Ala126 EPO.

82. An isolated nucleic acid comprising a nucleotide sequence which encodes an EPO-IgG

fusion protein, wherein at least one amino acid residue of the encoded EPO-IgG which can serve as a glycosylation site in EPO is altered such that it does not serve as a glycosylation site in the EPOa.

83. An expression vector or a construct which comprises the nucleic acid of claim 82.

84. A cell which comprises the vector or construct of claim 83.

85. A method of making an EPO-IgG fusion in a construct or a vector, comprising forming in a construct or vector a sequence in which a nucleic acid which comprises a nucleotide sequence encoding an EPOa is linked in frame to a nucleic acid which comprises a nucleotide sequence encoding human serum albumin.

86. A method for making an EPO-IgG fusion protein comprising:

supplying a cell which comprises a nucleic acid which encodes an EPO-IgG fusion protein; and,

expressing said EPO-IgG fusion protein from said nucleic acid, thereby making said EPO-IgG fusion protein.

87. The method of claim 86, wherein said cell is selected from a group consisting of a mammalian, yeast, plant, insect or a bacterial cell.

88. A method of making an EPO-IgG fusion protein comprising:

providing a transgenic organism which includes a transgene which directs the expression of EPO-IgG fusion protein;

allowing the transgene to be expressed; and,

recovering EPO-IgG fusion protein.

89. The method of claim 88 wherein, the transgenic organism is a transgenic animal.

90. The method of claim 88 wherein, the transgenic organism is a transgenic dairy animal.

91. The method of claim 88 wherein, the EPO-IgG fusion protein is made in a mammary gland of a transgenic mammal under the control of a milk specific promoter.

92. The method of claim 91 wherein, said promoter is a milk serum protein or casein promoter.

93. The method of claim 92 wherein, the transgenic mammal is a goat.

94. A method for providing a transgenic preparation which includes an EPO-IgG fusion protein in the milk of a transgenic mammal comprising:

providing a transgenic mammal having an EPO-IgG fusion protein protein-coding sequence operatively linked to a promoter sequence that results in the expression of the protein-coding sequence in mammary gland epithelial cells; and,

allowing the fusion protein to be expressed, and obtaining milk from the mammal, thereby providing the transgenic preparation.

95. A transgenic organism, which includes a transgene which encodes an EPO-IgG fusion protein.

96. The method of claim 95 wherein, the transgenic organism is a transgenic animal.

97. The method of claim 95 wherein, the transgenic organism is a transgenic dairy animal.

98. The method of claim 95 wherein, the EPO-IgG fusion protein is made in a mammary gland of a transgenic mammal under the control of a milk specific promoter.

99. The method of claim 98 wherein, said promoter is a milk serum protein or casein promoter.

100. The method of claim 99 wherein, the transgenic mammal is a goat or cow.

101. A pharmaceutical composition having a therapeutically effective amount of an EPO-IgG fusion protein.

102. A method of treating a subject in need of erythropoietin comprising administering a therapeutically effective amount of an EPO-IgG fusion protein to the subject.

103. The method of claim 102, wherein the method comprises administering a nucleic acid encoding an EPO-IgG fusion protein to the subject.

104. The method of claim 103, wherein the nucleic acid is administered in a cell.

105. The method of claim 104, wherein the cell is an autologous cell.

106. An erythropoietin analog, wherein four sites which serve as sites for gycosylation in erythropoietin are altered such that they do not serve as glycosylation sites.

107. The erythropoietin analog of claim 103 wherein the EPOa is Gl24, Gl38, Gl83, Alal26 EPO.

108. The transgenic organism of claim 95, wherein the organism is a rabbit.

109. The transgenic organism of claim 95, wherein the organism is a bird.

110. A method for making an EPO-IgG fusion protein in a cultured cell comprising supplying a cell which includes a nucleic acid which encodes an EPO-IgG fusion protein, and expressing the EPO-IgG fusion protein from the nucleic acid, thereby making the EPO-IgG fusion protein.

111. The method of claim 110, wherein said milk specific promoter is selected from the group consisting of a β-casein promoter, a β-lactoglobin promoter, whey acid protein promoter and lactalbumin promoter.